

Appl. No. 09/854,362
Amdt. Dated December 18, 2003
Reply to Office action of July 22, 2003

Amendments to the Specification:

Please replace paragraph [0021], with the following amended paragraph:

[0021] (g) preparing a further flow field plate with a seal and placing this on top of the membrane ~~exchange~~electrode assembly, while ensuring the seal of the second plate falls around the second GDM;

Please replace paragraph [0023], with the following amended paragraph:

[0023] This process needs to be ~~completed~~repeated until the last cell is formed and it is then topped off with a bus bar, insulator plate and the final end plate.

Please replace paragraph [0082], with the following amended paragraph:

[0082] The first embodiment of the apparatus is shown in Figure 1a and indicated generally by the reference 20. For simplicity, this Figure shows just part of a fuel cell stack, as does Figure 2. It will be understood that the other fuel cells in the stack correspond, and that the fuel cell stack would include conventional end elements, clamping elements and the like. In general, Figures 1a-3 are intended to indicate the essential elements of the individual embodiments of the invention, and it will be understood by someone skilled in this art that the fuel cell stacks would be otherwise conventional. Also in Figures 1a-e and 2, the proton exchange ~~member~~membrane is shown, for clarity, with exaggerated thickness, and as is known, it has a small thickness. In Figures 1a-e, the grooves for the seal material are shown schematically, and it is expected that the grooves will usually have a depth and width that are similar, i.e. a generally square cross-section. Note also that the bottom of the grooves can have any desired profile.

Please replace paragraph [0117], with the following amended paragraph:

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[0117] To provide a connection through the various flow field plates and the like, a connection aperture 160 is provided, which has a width of 0.25", rounded ends with a radius of 0.125" and an overall length of 0.35". As shown, in Figure 7 connection aperture 160 is dimensioned so as to clearly intercept the groove segments 152, 154. This configuration is also found in the end plates, insulators and current collection plates, as the connection aperture 160 continues through to the end plates and the end plates have a corresponding groove profile. It is seen in greater detail in Figures 12 and 15, and is described below.

Please replace paragraph [0126], with the following amended paragraph:

[0126] Thus, for the anode end plate 102, there is a groove network 190, that corresponds to the groove network on the front face of the ~~anode~~cathode flow field plate 120. Accordingly, similar reference numerals are used to designate the different groove segments of the anode and anode end plates 102, 104 shown in detail in Figures 11-13 and 14-15, but identified by the suffix "e". As indicated at 192, threaded bores are provided for receiving the tie rods ~~132~~131.

Please replace paragraph [0143], with the following amended paragraph:

[0143] If any leaks are detected, the fuel cell will most likely have to be repaired. Depending on the nature of the leak and details of an individual stack design, it may be possible simply to separate the whole assembly at one seal, clear out the defective seal and then form a new seal. For this reason, it may prove desirable to manufacture relatively small fuel cells stacks, as compared to other conventional practice. While this may require more inter-stack connections, it will be more than made up for by the inherent robustness ~~of~~and reliability of each individual fuel cell stack. The concept can be applied all the way down to a single cell unit (identified as a Membrane Electrode

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Unit or MEU) and this would then conceivably allow for stacks of any length to be manufactured.

Please replace paragraph [0151], with the following amended paragraph:

[0151] In Figure 1d and 1e, the anode and cathode flow field plates have flat, opposing faces, although it will be understood that these faces, in known manner, would include flow channels for gases. As these faces are otherwise flat, this greatly eases tolerance and alignment concerns, and in general it is expected that the MEA 26d,e can be inserted without requiring ~~on any~~ tight tolerances to be maintained.